

Fig. 1

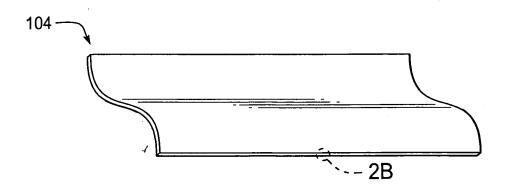


Fig. 2A

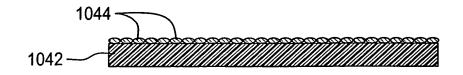


Fig. 2B

## **Anodic Reaction**

$$H_2(g) + M_{\alpha}(s)$$
  $\longrightarrow$   $H_2M_{\alpha}(s)$  Adsorption
$$H_2M_{\alpha}(s) \longrightarrow [H^+-H-M_{\alpha}](s) + \beta e^- \qquad \text{Charge Transfer \& Surface Dissociation}$$

$$[H^+-H-M_{\alpha}](s) \longrightarrow \gamma H^+ + M_{\alpha}(s) \qquad \text{Diffusion}$$

## **Cathodic Reaction**

$$O_2(g) + M_{\alpha}(s)$$
  $O_2M_{\alpha}(s)$  Adsorption
$$O_2M_{\alpha}(s) + \beta e^- \longrightarrow [O^--O-M_{\alpha}]$$
 Charge Transfer & Surface Dissociation
$$[O^--O-M_{\alpha}] + \gamma H^+ \longrightarrow H_2O + OM_{\alpha}$$
 Diffusion

Fig. 3

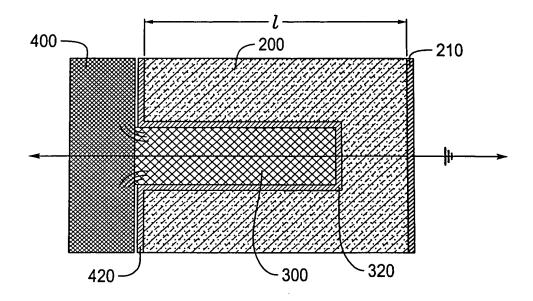


Fig. 4

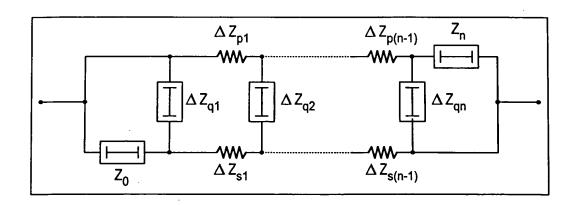


Fig. 5

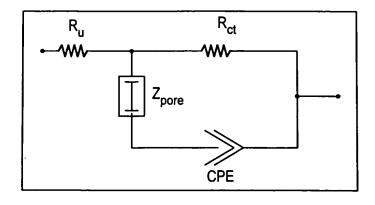


Fig. 6

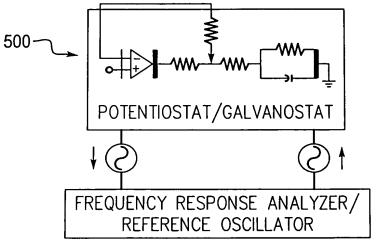


Fig. 7A

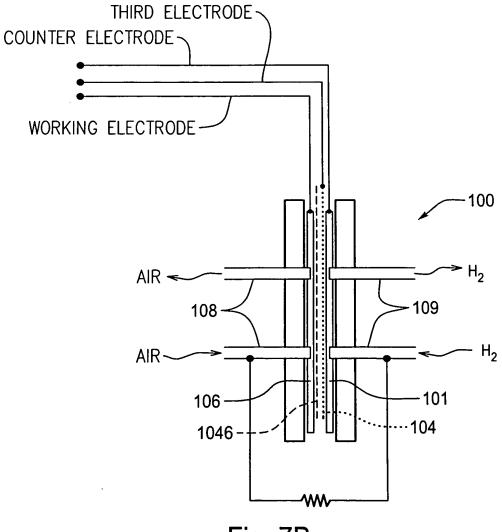
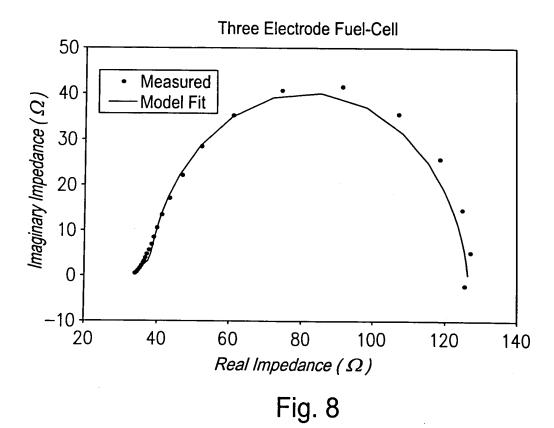


Fig. 7B



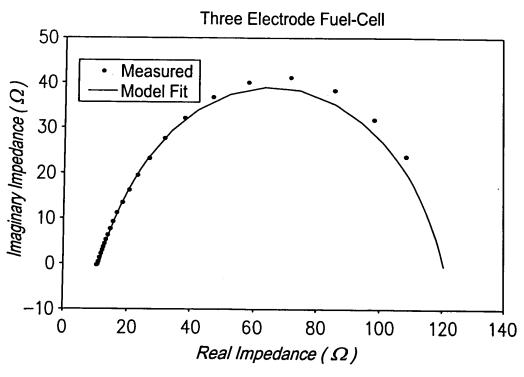


Fig. 9

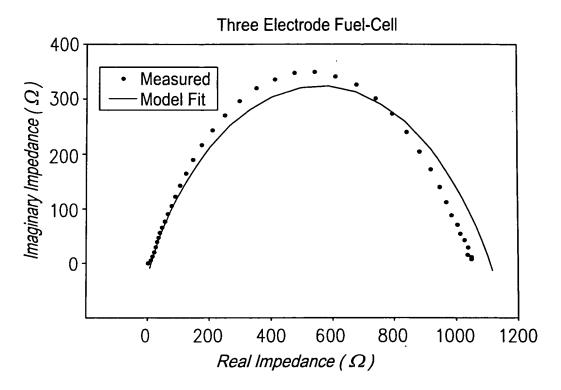


Fig. 10

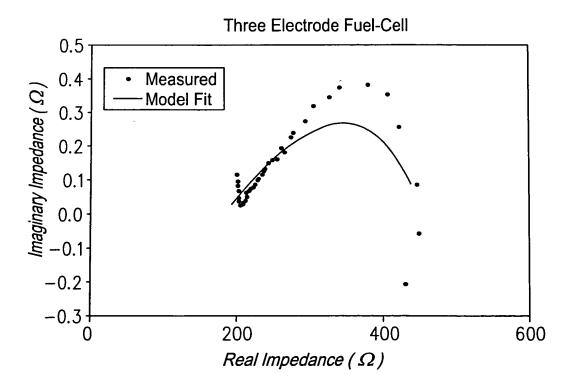


Fig. 11

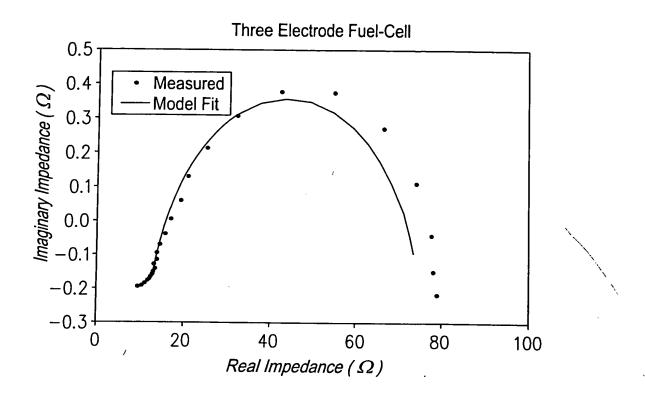


Fig. 12